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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,246	08/26/2003	Masao Kondo	031021	1771

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EXAMINER	
NGUYEN, TUAN H	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,246	KONDO ET AL.	
	Examiner	Art Unit	
	Tuan H. Nguyen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 8-20* is/are rejected.

7)☒ Claim(s) *5-7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/26/03,9/25/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8-12, 16, 17, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Dhote et al..

See Dhote et al., figs. 8-16 and related text on col. 8-10 which discloses the claimed method for forming a capacitor and a structure thereof, including forming a conductive metal oxide layer 108 of $LaNiO_3$ having a (001) orientation on an underlying body; forming a ferroelectric layer 50 of PbZr Ti having a (001) orientation on the conductive metal oxide layer 108; forming an upper electrode 110 on the ferroelectric layer 50 (fig. 12 shows the capacitor structure and fig. 13 and text on col. 9, lines 19-25 shows the orientation).

With respect to claim 8-10, see col. 10, fourth paragraph which discloses the use of $Pb_{1-y}La_y(Zr, Ti, Nb)O_3$.

With respect to claims 11-12, fig. 12 shows a conductive plug 38 formed through the first interlayer insulating film 30, 36 and connected to the MOS transistor formed on the silicon substrate 22 wherein lower electrode 108 is formed on the first insulating film, and connected to the conductive plug 38; a second interlayer insulating film 56 is further formed on the first insulating film 30, 36 and covering the capacitor.

With respect to claims 17, 20, see col. 9, second paragraph which discloses the step of depositing the ferroelectric stack including $LaNiO_3$ by laser pulse deposition at the substrate temperature of 550℃ . The heating continues after the deposition of conductive metal oxide until the ferroelectric stack is completely deposited.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhote et al. as applied to claims 1, 2, 8-12 above, and further in view of Izuha et al..

Dhote et al., in a method for forming a capacitor and a structure thereof, shown in figs. 8-16 and related text on col. 8-10, as explained above, fails to teaches the conductive metal oxide containing Sr as additive.

Izuba et al., in a thin film dielectric for a capacitor, col. 9, line 15 discloses the use of Sr as additive in forming conductive metal oxide of $LaNiO_3$.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Sr as additive in $LaNiO_3$ as suggested by Izuba et al. in Dhote et al. for improving in lattice matching, conductivity and surface flatness.

Claims 13-15, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhote et al. as applied to claims 1-2, 8-12, 16, 17, 20 above, and further in view of Kurasawa et al..

Dhote et al., in a method for forming a capacitor and a structure thereof, shown in figs. 8-16 and related text on col. 8-10, as explained above, fails to teaches the step of forming perovskite-type structure by sol-gel, interconnection, and the use of ferroelectric capacitor in acoustic wave element.

Kurasawa et al., column 7, second paragraph to col. 8, second paragraph teaches the use of either sol-gel or sputtering or CVD for forming perovskite-type structure and subsequently heating in oxygen atmosphere, fig. 12-16 and related text, also discloses the interconnect conductive plugs and wiring 57 formed through the second interlayer insulating 56 and reaching the upper electrode 53A, lower electrode 56B and conductive plug 56C (fig. 16N, 16O and related text on col. 10, last two paragraphs).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the wiring as suggested by Kurasawa et al. in Dhote et al. for forming perovskite-type structure by either sol-gel or CVD or sputtering or laser deposition which is well-known and commercially available, and interconnecting the ferroelectric capacitor device to complete the circuit and perform a desired function in bulk or surface acoustic wave element.

Allowable Subject Matter

Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: None of the references of record teaches or suggests the formation of conductive metal oxide having (001) orientated ABO_3 type perovskite-structure on the first surface of an underlying body wherein the first surface is of polycrystalline or amorphous phase.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Noguchi et al. is cited as of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 571-272-1694. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan H. Nguyen
Primary Examiner
Art Unit 2813